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ACTION

DIST.	LTR	ENC
BURLINGAME, A.H.		
BUSBY, W.S.		
CARNIVAL, G.J.		
CORDOVA, R.C.		
DAVIS, J.G.		
FERRERA, D.W.		
FRAY, R.E.		
GEIS, J.A.		
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GOLAN, P.M.		
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HEALY, T.J.		
HEDAH, T.G.		
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HUTCHINS, N.M.		
JACKSON, D.T.		
KELL, R.E.		
KUESTER, A.W.		
MARX, G.E.		
MCDONALD, M.M.		
McKENNA, F.G.		
MORGAN, R.V.		
PIZZUTO, V.M.		
POTTER, G.L.		
SANDLIN, N.B.		
SATTERWHITE, D.G.		
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SETLOCK, G.H.		
STIGER, S.G.		
TOBIN, P.M.		
VOORHEIS, G.M.		
WILSON, J.M.		
PETERMAN, B.	X	
COWDERY		
HOLLOWELL, L.	X	

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CORRES. CONTROL X X
ADMN RECORD/080
PATS/T130G

Reviewed for Addressee
Corres. Control RFP

11-29-94
DATE BY

Ref Ltr. #

DOE ORDER # 5400.1



Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928



000047196

EC&C
ROCKY FLATS PLANT
CORRESPONDENCE CONTROL NOV 25 1994

94-DOE-12079

Mr. Joe Schieffelin, Unit Leader
Hazardous Waste Facilities
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Mr. Schieffelin:

The Department of Energy (DOE) committed in our letter of August 5, 1994, to submit a plan for the investigation of tanks T-11 and T-30 as part of the Technical Memorandum (TM) No. 1. Volume 1 - Part A of Operable Unit No. 9 under the Interagency Agreement. The DOE had assumed that these tanks were active when the TM was originally prepared. Subsequently, in response to comments submitted by the Colorado Department of Public Health and the Environment, the DOE determined that the tanks were not active and that investigation of these tanks as part of the TM would be appropriate.

Therefore, the plan for the investigation of tanks T-11 and T-30 is attached for your review. This plan replaces a portion of Section 1.2 and all of Section 3.2.6 of the TM and will become part of the TM controlled document after any comments that you may have are resolved. Please make your comments by December 19, 1994, to avoid schedule impacts because preparations for the field work associated with this TM are underway.

If you have any questions please contact Regina Sarter at 966-7252.

Sincerely,



Steven W. Slaten
Steven W. Slaten
LAG Project Coordinator
Environmental Restoration

Enclosure

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ADMIN RECCRD
IA-A-000354

418

J. Schieffelin
94-DOE-12079

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NOV 25 1994

cc w/ Enclosure:
M. Hestmark, EPA
B. Brainard-Jordan, OC, RFFO

cc w/o Enclosure:
J. Roberson, AMER, RFFO
F. Lockhart, ER, RFFO
R. Sarter, ER, RFFO
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C. Cowdry, EG&G



JACOBS ENGINEERING GROUP INC.

600 SEVENTEENTH STREET, SUITE 1100N • DENVER, COLORADO 80202
TELEPHONE (303) 595-8855 FAX (303) 595-8857

September 6, 1994

05H60209

Mr. Craig Cowdery
Rocky Flats - Interlocken
EG&G Rocky Flats, Inc.
P.O. Box 464
Golden, CO 80402-0464

Subject: Submittal of 6 Copies of Technical Memorandum No. 1, Volume I
Addendum for Tanks T-11 and T-30

Ref: Master Task Subcontract No. MTS22544RR
Task Order Contract No. MTS237441GG3

Dear Craig:

Provided as Enclosure (1) are 6 copies of the Final Technical Memorandum No. 1, Volume I Addendum which includes Tanks T-11 and T-30 information and investigation strategy. Your comments have been addressed as requested.

Please let me know if you need any additional assistance with this or any other matter.

Sincerely,

JACOBS ENGINEERING GROUP INC.


John Zimmerman
OU9 Project Manager


for Farrel Hobbs
Project Manager
Denver Operations

Enc: (1) 6 copies

cc: Project File
EM Record Center

TABLE 1-1
TANK DESCRIPTIONS
OU9 ORIGINAL PROCESS WASTE LINES

TANK NUMBER	HSS	BUILDING NO.(1)	NUMBER OF TANKS	CONSTRUCTION TYPE(2)	VOLUME (gal)	CONSTRUCTION MATERIAL(3)	TANK STATUS(4)	YEAR INSTALLED
T-1	NA	122	1	UG	800	SS	Removed (Jan 1984)	1955
T-2	122	441	1	UG	3,000	Conc	Abandoned (June 1982)	1952
T-3	122	441 (429)	2	1 - UG, 1 - AG1	UG-3,000, AG-3,200	UG-Conc, AG-Stl	Abandoned (June 1982)	1952
T-4	NA	447	3	FS	60 ea	Conc	Active(a)	1962
T-5	NA	444	2	AG1	4,000 ea	Stl	Active(b)	1952
T-6	NA	444	2	FS	500 & 300	Conc	Active(a)	1952
T-7	159	559 (528)	2	AG2	2,000 ea	Stl	Currently inactive (90-day)*	1969
T-8	126	771 (728)	2	UG	25,000 ea	Conc	Plenum deluge(d)	1952
T-9	132	776 (730)	2	UG	22,500 ea	Conc	Plenum deluge(d)	1955
T-10	132	776 (730)	2	UG	4,500 ea	Conc	Abandoned (Dec 1982)	1955
T-11	NA	707 (731)	2	UG	2,000 ea	Conc	Abandoned part removed 1975	1959
T-12	NA	N/A	N/A	N/A	N/A	N/A	Invalid tank location	N/A
T-13	215	774	1	SU	600	Conc	Abandoned (1972)	1952
T-14	124	774	1	UG	30,000	Conc	Abandoned (1989)	1952
T-15	146	774	2	UG	7,500 ea	Conc	Removed (1972)	1969
T-16	124,125	774	2	UG	14,000 ea	Conc	Abandoned (1989)	1952
T-17	146	774	4	UG	2-3,750; 2-7,500	Conc	Removed (1972)	1969
T-18	NA	778	1	SU	Unknown	Conc	Abandoned (1982?)	Unk.
T-19	NA	779	2	SU	1,000 ea	Conc	Plenum deluge(d)	1964
T-20	NA	779	2	SU	8,000 ea	Conc	Abandoned (Dec 1982)	1964
T-21	NA	886 (828)	1	FS	135	Conc	Abandoned (1978)	1963
T-22	NA	886 (828)	3	AG2	2-450, 1-100	SS	Abandoned (1978)	1963
T-23	NA	865	1	SU	6,000	Conc	Abandoned (May 1982)	1979
T-24	NA	881 (887)	7	AG2	2,700 ea	Stl	Active(b)	1952
T-25	NA	883	2	AG1	750 ea	Stl	Active(b)	1952
T-26	NA	883	3	AG1	750 ea	Stl	Active(b)	1965
T-27	NA	886	1	AG1	500	Stl	Removed (July 1989)	Unk.
T-28	NA	889	2	FS	1,000	Conc	Active(a)	1965
T-29	NA	774	1	OG	200,000	Stl	Abandoned (1985)	1952
T-30	NA	707 (731)	1	SU	23,111	Conc	Active(e)	1959

TABLE 1-1
TANK DESCRIPTIONS
OU9 ORIGINAL PROCESS WASTE LINES

TANK NUMBER	HSS	BUILDING NO.(1)	NUMBER OF TANKS	CONSTRUCTION TYPE(2)	VOLUME (gal)	CONSTRUCTION MATERIAL(3)	TANK STATUS(4)	YEAR INSTALLED
T-31	NA	N/A	N/A	N/A	N/A	N/A	Invalid tank location	N/A
T-32	NA	881 (887)	1	SU	131,160	Conc	Active(e)	1952
T-33	NA	N/A	N/A	N/A	N/A	N/A	Invalid tank location	N/A
T-34	NA	N/A	N/A	N/A	N/A	N/A	Invalid tank location	N/A
T-35	NA	N/A	N/A	N/A	N/A	N/A	Invalid tank location	N/A
T-36	NA	771C	1	SU	500	Stl	Abandoned (1984)	1965
T-37	NA	771C	1	SU	500	Conc	Abandoned (1984?)	Unk.
T-38	NA	779	1	AG2	1,000	Stl	Active(e)	Unk.
T-39	NA	881	4	AG1	250 ea	Stl	Removed (1975)	1952
T-40	NA	889	2	UG	400 ea	Conc	Abandoned (1981/1982)	mid 1950s

Notes:

(1) Building numbers in parentheses are process waste pits adjacent to production buildings.

(2) Tank Types:

FS Floor Sump (used for spill control)
 SU Sump (open-top or covered)
 UG Underground (sealed, permanently closed top)
 AG1 Above-Grade
 AG2 Above-Grade in sump
 OG On-Grade

(3) Tank Materials:

SS Stainless Steel
 Stl Steel
 Conc Concrete

(4) Active Tank Categories (as marked):

a Incidental spill control; not RCRA-permitted
 b RCRA-Interim status process waste tank
 c 90-day transuranic waste tank
 d Converted to the RFP plenum fire deluge system as a firewater catch tank
 e Secondary containment for RCRA-permitted waste tank

N/A = Not Applicable

NO = Number

RCRA = Resource Conservation and Recovery Act

RFP = Rocky Flats Plant

*Currently inactive and undergoing decontamination for subsequent reuse. Investigation of actively used tanks is postponed until the use of tank is discontinued.

TABLE 1-2
OUTSIDE TANK/INDIVIDUAL HAZARDOUS SUBSTANCE SITE NUMBERS AND DESCRIPTIONS
OU9 ORIGINAL PROCESS WASTE LINES

TANK NUMBER	OTHER HSS NOS.	EG&G TANK NUMBER	BUILDING NO.	NUMBER OF TANKS	CONSTRUCTION TYPE	VOLUME	CONSTRUCTION MATERIAL	WASTE STREAM	TANK STATUS	DATE	AIR EMISSION INVENTORY NO.	RCRA ID NUMBER
T-1	NA	UNKNOWN	122	1	UG	800	STAINLESS	BLDG 122 WASTE	REMOVED	JAN 1984	-	-
T-2	122	UNKNOWN	441	1	UG	3,000	CONCRETE	BLDG 122, 123, 441 WASTE	PART REMOVED	1986	-	-
T-3	122	T-123	441	1	AG	3,200	STEEL	BLDG 122, 123, 441 WASTE	ABANDONED	JUNE 1982	#00076	-
				1	UG	3,000	CONCRETE	BLDG 122, 123, 441 WASTE	ABANDONED	JUNE 1982	#00077	-
T-7	150	T1-522, T2-523	550(526)	2	AG in sump	2,000	STEEL	BLDG 550 WASTE	INACTIVE (90 DAY)*		-	?
T-8	126	T8 EAST, T8 WEST	771(726)	2	UG	25,000	CONCRETE	771 WASTE AND 771 PLENUM DELUGE	CONVERTED TO PLENUM DELUGE	MAY 1984	T1-#00292, T2-#00293	-
T-9	132	730 TANKS	776(730)	2	UG	22,500	CONCRETE	LAUNDRY WATER FROM BLDG 776	CONVERTED TO PLENUM DELUGE	OCT 1984	00300	-
T-10	132	730 TANKS	776(730)	2	UG	4,500	CONCRETE	LAUNDRY WATER FROM BLDG 776	ABANDONED	DEC 1982	00302	-
T-11	NA	EAST & WEST PROCESS WASTE TANKS	707(731)	2	UG	2,000	CONCRETE	BLDG 707	PART REMOVED	1975	-	-
T-30	NA	731 STRUCTURE	731	1	SUMP	23,111	CONCRETE	BLDG 707	ACTIVE SPILL CONTROL		-	CONTAMINANT REF #2011
T-14	124	T-66	774	1	UG	30,000	CONCRETE	BLDG 774 HIGH-NITRATE WASTE	ABANDONED	NOV 1989	#184, NDT-1167	#55.18
T-16	124, 125	T-66, T-67	774	2	UG	14,000	CONCRETE	BLDG 774 HIGH-NITRATE WASTE	ABANDONED	NOV 1989	00182 00183	T66-#55.14, T67-#55.15
T-15	146	T-34E, T34W	774	2	UG	7,500	CONCRETE	BLDG 774 TREATED AQUEOUS WASTE	REMOVED	1972	-	-
T-17	146	T-30, T-33 T-31, T-32	774	2	UG	3,750	CONCRETE	BLDG 774 TREATED AQUEOUS WASTE	REMOVED	1972	-	-
				2	UG	7,500	CONCRETE	BLDG 774 TREATED AQUEOUS WASTE	REMOVED	1972	-	-
T-21	NA	BLDG 661 FLOOR SUMP	666(626)	1	FS	250	CONCRETE	INCIDENTAL OVERFLOW FROM T-22	ABANDONED	1978	?	-
T-22	NA	TANKS 440, 448	666(626)	2	AG	450	STAINLESS	T-440 and T-448 - BUILDING 666 ROOMS 101 AND 103 WASTE AND FISSILE URANIUM	ABANDONED	1978	#00039, #000294	-
				1	AG	100	STAINLESS	PLUTONIUM				-
T-27	NA	PORTABLE LIQUID DUMPSTER	666	1	AG	500	STEEL	FROM T-22, BLDG 666	REMOVED	JULY 1989	-	-
T-24	NA	T-183, 184, 185, 802A, 802B, 802C, 802D	661(667)	7	AG	2,700	STEEL	BLDG 661 WASTE	ACTIVE/RCRA		-	#40.20-40.26
T-32	NA	BLDG 661 PROCESS WASTE PIT	661(667)	1	SUMP	131,180	CONCRETE	BLDG 661 WASTE	ACTIVE/INCIDENTAL SPILL CONTROL		-	SCR #2014
T-29	NA	T-207	SOUTH 774	1	ON-GRADE	200,000	STEEL	UNTREATED 774 WASTE	ABANDONED	1985	#00196, NDT-1164	#40
T-40	NA	UNKNOWN	NORTH 669	2	UG	400	CONCRETE	BLDG 669 WASTES	ABANDONED	1981/1982	-	-

NOTES:

- AG = aboveground
 - Bldg. = Building
 - gal = gallons
 - ID = Identification
 - NOS = Numbers
 - RCRA = Resources Conservation and Recovery Act
 - UG = underground
 - FS = Floor Sump
 - * = currently inactive and undergoing 90-day closure for subsequent reuse
- Investigation of actively used tanks will be postponed until use of tanks is discontinued.

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Memorandum is Volume I, Part A - Outside Tanks. Part B (Inside Tanks) and Volume II (Pipelines) are planned to be submitted at a later date.

At this time, a document/drawing search of the OPWL pipelines is proceeding concurrently with the outside building tank investigations. This search includes acquiring engineering drawings and information to supplement knowledge of pipeline locations, structural features, and releases to better define initial sampling locations. Because the majority of valve vaults are associated with the pipelines and further information is being collected on the pipelines including structural features such as valve vaults, valve vaults associated with pipelines will be addressed in Volume II of this Technical Memorandum, which will be submitted at a later date. However, any valve vault that is associated with an OPWL tank (e.g., Tank T-3) will be investigated under this volume of the Technical Memorandum for tanks outside buildings or under Volume I, Part B, for tanks inside buildings.

The outside tanks in the OPWL are generally tanks in open areas of the Industrial Area (IA) at RFP and are either outside or are within small buildings (vaults or waste pits) that only enclose the tank. There are 20 outside tank locations. The tank numbers and descriptions for outside tanks are listed in Table 1-2. Potential overlap of these tanks with other OUs or Individual Hazardous Substance Sites (IHSSs) is shown in Table 1-3.

Some of these tanks are actively used at the Plant and, therefore, are not included for investigation under this Technical Memorandum. These include Tanks T-8, T-9, T-24, and T-32. Investigation of these tanks will be deferred until they become inactive; however, the possibility of initiating investigations before they are inactivated will be further evaluated.

The tank investigations comprise two stages. Stage 1 is designed to locate areas of contamination within the OU9 vadose zone soils and to assess the nature of contamination

TABLE 1-3 (continued)
POTENTIAL OPWL INTERACTIONS WITH OTHER RFP OPERABLE UNITS

TANK	POTENTIAL INTERACTION WITH OTHER OUs
T-9, 3T-10 (cont.)	IHSS 118.1 (Multiple Solvent Spills West of Building 730), OU8, is located immediately west of the building which houses T-9 and T-10. 118.1 is the former location of an underground carbon tetrachloride storage tank which may have leaked during its operating history. The tank was removed in 1981. The IAG specifies a soil gas survey of 118.1, with soil borings where the survey detects contamination.
T-11, T-30	None
T-14, T-16	T-14 and T-16 consist of three inactive process waste tanks (designated T66, T67, and T68) located on the east side of Building 774. Two other IHSSs also address these tanks. IHSS 124 (Radioactive Liquid Waste Storage Tanks), is comprised of three subparts (124.1, 124.2, and 124.3) which target T66, T67, and T68, respectively. IHSS 125 (Holding Tank), also targets tank T66. IHSSs 124 and 125 have incorporated in to OU9 from OU8.
T-21, T-22	IHSS 164.2 (Building 886 Radioactive Spills) that has been incorporated from OU14, targets uranium contamination in soil around and beneath Building 886. 164.2 appears on location maps to focus on the eastern side of 886, whereas T-21 and T-22 are immediately west of 886. The IAG specifies a surface radiation survey and analysis of soil boring samples for HSL volatiles, HSL semi-volatiles and various radionuclides at 164.2.
T-24, T-32	T-24 and T-32 are possibly affected by IHSSs 106 (Outfall) and 107 (Hillside Oil Leak), OU1. Numerous monitoring wells and boreholes have been completed in the vicinity of T-24 and T-32 in conjunction with the 881 Hillside RI. T-24 and T-32 are active, permitted RCRA waste units.
T-27	T-27 is immediately adjacent to T-21 and T-22; see T-21, T-22 comments.
T-29	Chromate contamination related to IHSS 137 (Cooling Tower Blowdown, Building 774), OU8 may affect soils on the northwest side of T-29.
T-40	IHSS 164.3 (Building 880 Storage Pad); OU14 targets TCL volatiles, TCL semivolatiles, and various radionuclides.

TABLE 3-1
SAMPLE, MEDIA, QUANTITY, AND ANALYTES
OU9 ORIGINAL PROCESS WASTE LINES

TANK No.	DUPLICATE IHSS No.	TANK INSPECTION	HPGe/Nal SURVEY	RESIDUE OR WIPE (1)	VAULT WATER (2)	GROUND- WATER (2)	SURFACE SOIL	BOREHOLE/ SOIL SAMPLES	SAMPLE ANALYTE							
									METALS	VOLs	SEM-VOLs	RAD	WQ	PCBs	PEST.	HERB.
T-1	NA	NO	4/TBD	0	0	3	0	3/6	X	NA	NA	X	X	NA	NA	NA
T-2, T-3,	IHSS 122	YES (T-3)	4/TBD	3 (T-2) 1 (T-3)	3 (T-2)	5	11	5/15	X	X	X	X	X	X	NA	NA
T-7	IHSS 150	NO	4/TBD	0	0	4	0	4/12	X	X	X	X	X	X	X	X
T-8	IHSS 126	Active fire plenum tanks - no investigation proposed.														
T-9	IHSS 132	Active fire plenum tanks - no investigation proposed.														
T-10	IHSS 132	YES	4/TBD	2	0	4	0	4/12	X	X	X	X	X	NA	NA	NA
T-11, T-30	NA	YES	5/TBD	3	0	4	0	4/12	X	X	X	X	X	NA	NA	NA
T-14, T-16	IHSSs 124 and 125	YES	12/TBD	1 (T-14) 2 (T-16)	0	5	0	5/25	X	X	X	X	X	NA	NA	NA
T-15, T-17	IHSS 140	NO	see T-14, T-16	0	0	see T-14, T-16	see T-14, T-16	0	X	X	X	X	X	NA	NA	NA
T-21, T-22	NA	YES	4/TBD	1 (T-21) 3 (T-22)	2	4	0	4/12	X	X	X	X	X	NA	NA	NA
T-27	NA	NO	see T-21, T-22	0	0	0	3	0	X	X	X	X	NA	NA	NA	NA
T-24	Active RCRA Interim status unit - no investigation proposed.															
T-32	Active secondary containment unit - no investigation proposed.															
T-29	NA	YES	10/TBD	2	1	4	2	4/12	X	X	X	X	X	NA	NA	NA
T-40	NA	YES	4/TBD	2	2	4	0	4/12	X	X	X	X	X	NA	NA	NA
TOTAL				20	8	37	16	37/118								

Notes:

(1) If no residue is present, a wipe sample will be collected. Wipe samples will be analyzed only for qualitative radiological analysis.

(2) Sample collected only if water is encountered.

Herb = Herbicides

HPGe = High purity Germanium

IHSS = Individual Hazardous Substance Site

NA = Not applicable

Nal = Sodium Iodide, conducted only if HPGe data indicate anomalies

No = Number

PCBs = Polychlorinated biphenyls

Pest = Pesticides

Rad = Qualitative radiological analysis

RF = Rocky Flats Method

TBD = to be determined in the field based on HPGe results

Vols = Volatiles

WQ = pH, specific conductivity, selected anions (nitrate/nitrite, sulfate, chloride, fluoride),
total organic carbon (only for water samples)

X = analytes to be tested

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3.2.6 Tanks T-11 and T-30

Tanks T-11 and T-30 are located in Building 731 (the Building 707 Process Waste Pit). Tank T-11 consists of two 2,000 gallon, concrete tanks that were situated inside the Building 731 structure. Tank T-30 is one 23,111 gallon underground concrete structure (Building 731) and a 100 gallon concrete sump. In 1975, the concrete tanks were partially removed. The concrete wall that separated the two tanks was removed along with part of the concrete tank surface. New concrete was poured into the old process waste tanks and the 100 gallon sump. Currently, the area of the old process waste tanks serves as a secondary containment for the Building 707 process waste tanks. Waste streams for Tanks T-11 and T-30 are from Building 707. These wastes include solvents, radionuclides, metals and other wastes used at RFP.

According to Building 707 personnel, there is a 100 gallon steel tank filled with Raschig Rings located in Building 731. This tank was used to contain fire deluge from Building 707. If the tank did overflow, it overflowed into the concrete process waste tanks. The piping that connected to the 100 gallon steel tank was disconnected in 1975. This tank did not contain process waste.

Stage 1 activities will include a HPGe Radiological Survey. If the results of the HPGe Survey detect anomalies, then a NaI Radiological Survey will be conducted on 4-foot grids.

A total of four soil boreholes will be drilled. One borehole at each accessible side of the concrete vault (T-30), containing the T-11 tanks. Three soil samples from each borehole will be collected at the following locations: Surface sample (0 to 6 inches), 1 foot below the base of the tanks (estimated at 13 to 15 feet below ground surface), and directly above the water table (estimated at 10 to 12 feet below ground surface).

If groundwater is encountered in the boreholes, a HydroPunch® sampler or equivalent will be used to collect a groundwater sample. One residue sample will be collected from each tank.

If no residue is present, then 1 wipe sample will be taken from the vault area for radiological analysis. Sample locations are provided in Figure 3-4a.

Soil, groundwater, and residue samples will be analyzed for radiological analyses that include gross alpha, gross beta, uranium 233, 234, 235, and 238, americium 241, and plutonium 239 and 240. Tritium will be analyzed in groundwater samples. Chemical analyses include TAL metals, TCL volatiles, TCL semi-volatiles, and water quality parameters that include pH, specific conductivity, nitrate/nitrite, sulfate, chloride, fluoride, and TOC. Wipe samples will be analyzed for quantitative radionuclides. In the event that the water table yields insufficient quantities of groundwater, samples will be collected based on the following priority. TCL volatiles, radionuclides, water quality parameters, TCL semi-volatiles, and metals.

3.2.9 Tanks T-21 and T-22

Tanks T-21 and T-22 are located in Building 828 (the Building 886 process waste pit). There is a discrepancy in the information obtained on what tanks are located in the waste pit. According to as-built drawing 14830-4 from 1965. The tank vault consists of a 135 gallon floor sump, one 450 gallon waste holding tank, one 450 gallon process tank and one 100 gallon process tank. According to building personnel the tank vault consists of a 250 gallon floor sump, one 250 gallon process waste tank and one 250 gallon process tank. This information will be clarified when the tank investigation occurs under stage 1 activities. Tanks T-21 and T-22 held waste from the laboratories in Building 886. Waste streams included radionuclides, laboratory soaps, janitorial cleaning fluids, and possibly nitrates, Tank -21, the floor sump, collected overflow from Tank T-22 and groundwater infiltrating the tank vault. The tanks were abandoned in 1978. There are no known releases at this location.

Stage 1 activities will include a visual tank inspection of the tanks. An HPGe radiological survey will be conducted around the tank locations. If the results of the HPGe detect anomalies, a NaI radiological survey will be conducted on 4-foot grids.

One residue sample will be collected from each tank and from the sump. If no residue is present, one wipe sample will be taken from the interiors of the tanks and sumps for radiological analysis. If groundwater has filled the pit or tanks, a water sample will be collected. (Reference Appendix B for access ports for residue sampling.)

A total of four soil boreholes will be drilled: one borehole at each accessible side of the concrete vault containing Tanks T-21 and T-22. Three soil samples from each borehole will be collected at the following locations: ground surface (before drilling), 1 foot below the base of the tanks (estimated at 20 to 25 feet below ground surface), and directly above the water table (estimated at 15 to 20 feet below ground surface).

If groundwater is encountered in the boreholes, a HydroPunch® sampler or equivalent will be used to collect a groundwater sample. Sample locations are shown in Figure 3-6.

Vault water, soil, and residue samples will be analyzed for radiological analyses that include gross alpha; gross beta; uranium 233, 234, 235, and 238; americium 241; plutonium 239 and 240; and cesium 137. Chemical analyses include TAL metals; TCL volatiles; TCL semivolatiles; and water quality parameters that include pH, specific conductivity, nitrate/nitrite, sulfate, chloride, fluoride, and TOC. Wipe samples, if collected, will be analyzed for quantitative radionuclides. In the event that the water table yields insufficient quantities of groundwater, samples will be collected based on the following priority: TCL volatiles, radionuclides, water quality parameters, TCL semivolatiles, and metals.

APPENDIX A
INVESTIGATION REQUIREMENTS AND PROPOSED ACTIONS
TANKS T-11, T-30
BUILDING 707 PROCESS WASTE PIT

INTER-AGENCY AGREEMENT REQUIRED ACTION	OU9 WORK PLAN REQUIRED ACTION	OU9 PROPOSED ACTION FOR STAGE I
No Required Action	<ol style="list-style-type: none"> 1. Conduct a prework radiation survey of borehole locations according to OP FO.16, Field Radiological Measurements. 2. Boreholes will be drilled and sampled according to OP GT.02, Drilling and Sampling Using Hollow-stem Auger Techniques, using the continuous core method. Investigation of removed tanks will consist of a single borehole drilled as closely as possible to the center of the original tank location. One discrete soil sample will be collected at each of the following locations: (a) ground surface (before drilling) collected according to OP GT.08, Surface Soil Sampling; (b) 1 to 3 feet below the base of the original tank; (c) directly above the water table or bedrock/alluvium contact, whichever is encountered first; and (d) in bedrock at the bedrock/alluvium contact if groundwater is not encountered above the contact (i.e., where the vadose zone extends to the bedrock/alluvium contact). 	<ol style="list-style-type: none"> 1. Conduct a visual tank inspection. 2. Conduct an HPGe survey of the area to assess radioactive contamination. If radioactive anomalies are found, a NaI radiation survey will be conducted. The survey will be conducted using 4-foot grids and will cover the entire area of T-11, T-30 to delineate source. 3. Conduct a prework radiation survey of all sample locations to assess radioactive contamination. Survey will be conducted using the NaI instrument, and in accordance with OP FO.16, Field Radiological Measurements. 4. One residue sample will be collected from each tank that has not been cleaned and painted since removal from process waste service, to help characterize OPWL wastes. In instances where no residue is present, one wipe sample will be collected from the interior surface of the tank. Wipe samples will be collected and tested according to OP FO.16, Field Radiological Measurements. 5. Four boreholes will be drilled; one on each side of the tanks. The boreholes will be drilled and sampled according to OP GT.02, Drilling and Sampling Using Hollow-stem Auger Techniques, using the continuous core method. In all cases, boreholes will be drilled as close as possible to the tank structure. One discrete soil sample will be collected at each of the following locations: (a) ground

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APPENDIX A
INVESTIGATION REQUIREMENTS AND PROPOSED ACTIONS
TANKS T-11, T-30
BUILDING 707 PROCESS WASTE PIT

INTER-AGENCY AGREEMENT REQUIRED ACTION	OU9 WORK PLAN REQUIRED ACTION	OU9 PROPOSED ACTION FOR STAGE I
		<p>surface (before drilling) collected according to OP GT.08, Surface Soil Sampling; (b) 1 to 3 feet below the base of below-grade tanks. If the base of the tank is in bedrock or if the water table is not encountered and the distance from the base of the tank to the alluvium/bedrock contact is less than 5 feet, this sample will be omitted; (c) directly above the water table or bedrock/alluvium contact, whichever is encountered first; and (d) 1 foot below the bedrock/alluvium contact or at refusal if bedrock is encountered before the water table.</p> <p>6. If groundwater is encountered during borehole drilling, a HydroPunch® will be used to collect groundwater samples according to OP GW.06, Groundwater Sampling.</p>
<p><u>Notes:</u></p> <p>HPGe = high purity germanium</p> <p>NaI = sodium iodide</p> <p>OP = EMD Operating Procedure</p> <p>OPWL = Original Process Waste Lines</p> <p>OU = Operable Unit</p> <p>RFP = Rocky Flats Plant</p>		

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APPENDIX A
INVESTIGATION REQUIREMENTS AND PROPOSED ACTIONS
TANK T-40
BUILDING 889 PROCESS WASTE PIT

INTER-AGENCY AGREEMENT REQUIRED ACTION	OU9 WORK PLAN REQUIRED ACTION	OU9 PROPOSED ACTION FOR STAGE I
No Required Action	Not previously identified.	<ol style="list-style-type: none"> 1. Conduct a visual tank inspection. 2. Conduct an HPGe survey of the area to assess radioactive contamination. If radioactive anomalies are found, a NaI radiation survey will be conducted. The survey will be conducted using 4-foot grids and will cover the entire area of T-40 to delineate source. 3. Conduct a prework radiation survey of all sample locations to assess radioactive contamination. Survey will be conducted using the NaI instrument, and in accordance with OP FO.16, Field Radiological Measurements. 4. One residue sample will be collected from each tank that has not been cleaned and painted since removal from process waste service, to help characterize OPWL wastes. In instances where no residue is present, one wipe sample will be collected from the interior surface of the tank. Wipe samples will be collected and tested according to OP FO.16, Field Radiological Measurements. 5. One water sample will be collected from the concrete vault if water is present. 6. Four boreholes will be drilled; one on each side of the tanks. The boreholes will be drilled and sampled according to OP GT.02, Drilling and Sampling Using Hollow-stem Auger Techniques, using the continuous core method. In all cases, boreholes will be drilled as close as possible to the tank structure. One discrete soil sample will be collected at each of the following locations: (a) ground




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APPENDIX A
INVESTIGATION REQUIREMENTS AND PROPOSED ACTIONS
TANK T-40
BUILDING 889 PROCESS WASTE PIT

INTER-AGENCY AGREEMENT REQUIRED ACTION	OU9 WORK PLAN REQUIRED ACTION	OU9 PROPOSED ACTION FOR STAGE I
		<p>surface (before drilling) collected according to OP GT.08, Surface Soil Sampling; (b) 1 to 3 feet below the base of below-grade tanks. If the base of the tank is in bedrock or if the water table is not encountered and the distance from the base of the tank to the alluvium/bedrock contact is less than 5 feet, this sample will be omitted; (c) directly above the water table or bedrock/alluvium contact, whichever is encountered first; and (d) 1 foot below the bedrock/alluvium contact or at refusal if bedrock is encountered before the water table.</p> <p>6. If groundwater is encountered during borehole drilling, a HydroPunch® will be used to collect groundwater samples according to OP GW.06, Groundwater Sampling.</p>
<p><u>Notes:</u></p> <p>HPGe = high purity germanium</p> <p>NaI = sodium iodide</p> <p>OP = EMD Operating Procedure</p> <p>OPWL = Original Process Waste Lines</p> <p>OU = Operable Unit</p> <p>RFP = Rocky Flats Plant</p>		





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Rocky Flats Plant

-  Buildings
-  Tanks
-  Process Waste Lines

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ACTIVITY NUMBER

	Borehole	4
	Residual	3
	Hydropunch	4
	HPGe	5

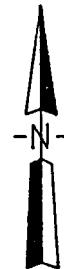



FIGURE 3-4a
SAMPLE LOCATIONS
FOR T-11 AND T-30
Operable Unit 9
Original Process Waste Lines

 EG&G ROCKY FLATS
Rocky Flats Plant
P.O. Box 464
Golden, Colorado 80402-0464

SCALE: 1" = 7'-6"

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